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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,252	09/09/2003	Akihiro Maezawa	KON-1823	4122
20311	7590	10/04/2005	EXAMINER	
LUCAS & MERCANTI, LLP 475 PARK AVENUE SOUTH 15TH FLOOR NEW YORK, NY 10016			LEE, SHUN K	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

EY

**Office Action Summary**

Application No.

10/658,252

Applicant(s)

MAEZAWA ET AL.

Examiner

Shun Lee

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### ***Drawings***

2. The drawings are objected to because where only a single view is used in an application to illustrate the claimed invention, it must not be numbered and the abbreviation "FIG." must not appear (37 CFR 1.84(u)(1)). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top

Art Unit: 2878

margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

4. Claim 5 is objected to because of the following informalities: ";;" on line 7 in claim 5 should probably be --;--. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

Art Unit: 2878

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada *et al.* (US 5,028,509) in view of Riman *et al.* (US 6,699,406) and Hampden-Smith *et al.* (US 6,210,604).

The specification discloses (pg. 13, lines 14-16) that "The term "spherical particles" here means particles which have a ratio of the long to the short dimensions being 0.95-1.05, employing an SEM observation method".

In regard to claims 1 and 5, Shimada *et al.* disclose a radiation image converting panel (column 11, line 60 to column 12, line 2) comprising a support having thereon a stimuable phosphor layer containing a polymer and a stimuable phosphor (column 4, line 53 to column 5, line 22) represented by Formula (1):  $M^1X \cdot aM^2X' \cdot bM^3X'' \cdot eA$  wherein  $M^1$  is at least one alkaline metal atom selected from the group consisting of Li, Na, K, Rb, and Cs;  $M^2$  is at least one divalent metal atom selected from the group consisting of Be, Mg, Ca, Sr, Ba, Zn, Cd, Cu, and Ni;  $M^3$  is at least one trivalent metal atom selected from the group consisting of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Al, Ga and In; X, X', and X'' each represents at least one halogen atom selected from the group consisting of F, Cl, Br, and I; A represents at least one metal atom selected from the group consisting of Eu, Tb, In, Ce, Tm, Dy, Pr, Ho, Nd, Yb, Er, Gd, Lu, Sm, Y, Tl, Na, Ag, Cu, and Mg; and a, b, and e each are numbers satisfying the conditions of  $0 \leq a < 0.5$ ,  $0 \leq b < 0.5$ , and  $0 < e \leq 0.2$ , the stimuable phosphor layer

Art Unit: 2878

having a thickness of 50  $\mu\text{m}$  to 1 mm (column 13, lines 16-22). The panel of Shimada *et al.* lacks that the stimuable phosphor has a spherical shape produced by sublimation of a CsBr:Eu precursor. Riman *et al.* teach (column 4, lines 58-67) to sublimate participated particles in order to obtain high purity by removing undesired compounds. Further, Hampden-Smith *et al.* teach (column 1, lines 20-42) to provide uniform high purity spherical phosphor particles having high crystallinity, in order to obtain high luminescent intensity and long lifetime. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to sublimate a CsBr:Eu precursor in the panel of Shimada *et al.*, in order to remove undesired compounds and obtain uniform high purity spherical phosphor particles so as to achieve high luminescent intensity and long lifetime.

In regard to claim 2 which is dependent on claim 1, Shimada *et al.* also disclose (column 11, lines 52-59) that the stimuable phosphor has an average particle diameter of 0.1 to 5  $\mu\text{m}$ .

In regard to claim 3 which is dependent on claim 1, Shimada *et al.* also disclose (column 4, line 53 to column 5, line 22) that the stimuable phosphor layer comprises Cs atom in an amount of not less than 10% based on the total weight of the layer.

In regard to claim 4 which is dependent on claim 1, Shimada *et al.* also disclose (column 4, line 53 to column 5, line 22) that the stimuable phosphor layer comprises: (i) CsBr; and (ii) Eu and an impurity, an amount of Eu and the impurity being 100 to 1000 ppm by weight based on the total weight of CsBr.

Art Unit: 2878

In regard to claim **6** which is dependent on claim 1, the panel of Shimada *et al.* lacks that the stimuable phosphor has a peak at (2,0,2) as a maximum peak measured with X-ray diffraction. Hampden-Smith *et al.* teach (column 1, lines 20-42) to provide uniform high purity spherical phosphor particles having high crystallinity, in order to obtain high luminescent intensity and long lifetime. Hampden-Smith *et al.* also teach (column 39, lines 51-56) that crystallinity is determined by X-ray diffraction. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a high crystallinity stimuable phosphor (with e.g., a (2,0,2) X-ray diffraction maximum peak) in the panel of Shimada *et al.*, in order to obtain high luminescent intensity and long lifetime.

In regard to claim **7** which is dependent on claim 1, Shimada *et al.* in view of Riman *et al.* and Hampden-Smith *et al.* is applied as in claim 1 above. The method of Shimada *et al.* lacks the steps of: (i) forming a CsBr:Eu precursor with an emulsified layer method by mixing: (a) an aqueous solution containing Cs ions, Br ions and Eu ions; (b) an organic solvent having a different solubility for the Cs ions, the Br ions and the Eu ions; and (c) a surface active agent; and (ii) isolating the CsBr:Eu precursor. Riman *et al.* teach (column 5, lines 28-67) to precipitate particles from an aqueous solution of constituent ions with a polar organic solvent, in order to obtain high quality optical materials with luminescent properties. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to precipitate an aqueous solution of constituent ions (e.g., Cs ions, Br ions and Eu ions) with an organic solvent

and a surface active agent in the method of Shimada *et al.*, in order to obtain phosphor particles having high quality optical quality.

In regard to claim 8 which is dependent on claim 1, Shimada *et al.* in view of Riman *et al.* and Hampden-Smith *et al.* is applied as in claim 1 above. The method of Shimada *et al.* lacks the steps of: (i) forming an aqueous phase containing Cs ions, Br ions and Eu ions; (ii) adding an organic phase containing an organic solvent and an surface active agent to the aqueous phase so as to obtain a CsBr:Eu precursor; and (iii) isolating the CsBr:Eu precursor. Riman *et al.* teach (column 5, lines 28-67) to precipitate particles from an aqueous solution of constituent ions with a polar organic solvent, in order to obtain high quality optical materials with luminescent properties. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to precipitate an aqueous solution of constituent ions (e.g., Cs ions, Br ions and Eu ions) with an organic solvent and a surface active agent in the method of Shimada *et al.*, in order to obtain phosphor particles having high quality optical quality.

In regard to claim 9 which is dependent on claim 1, Shimada *et al.* in view of Riman *et al.* and Hampden-Smith *et al.* is applied as in claim 1 above. Shimada *et al.* also disclose (column 11, lines 9-46) a step of heating the stimuable phosphor between 400 to 700°C under an atmospheric pressure.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada *et al.* (US 5,028,509) in view of Riman *et al.* (US 6,699,406), Hampden-Smith *et al.* (US 6,210,604), and Takahashi *et al.* (US 4,926,047).



Art Unit: 2878

In regard to claim **10** which is dependent on claim 1, Shimada *et al.* in view of Riman *et al.* and Hampden-Smith *et al.* is applied as in claim 1 above. Shimada *et al.* also disclose (column 11, line 60 to column 12, line 2) the steps of: (i) mixing a stimuable phosphor and a polymer to obtain a coating mixture; and (ii) coating the coating mixture on a support to obtain a coated layer (column 11, line 60 to column 12, line 2). The method of Shimada *et al.* lacks heating the coated layer under an inactive gas atmosphere so as to dry the coated layer. Takahashi *et al.* teach (column 7, lines 39-42) to heat the coated layer, in order to complete the formation of the phosphor layer. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to heat the coated layer (e.g., under an inactive gas atmosphere) in the method of Shimada *et al.*, in order to complete the formation of the phosphor layer.

### ***Conclusion***

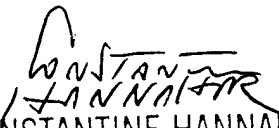
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2878

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SL

  
CONSTANTINE HANNAHER  
PRIMARY EXAMINER  
GROUP ART UNIT 2878